

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

REC'D 18 APR 2006

WIPO PCT PCT

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY  
(PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/IB2005/003800

International filing date (day/month/year)  
16.12.2005

Priority date (day/month/year)  
20.12.2004

International Patent Classification (IPC) or both national classification and IPC  
INV. F02D13/02 F02D41/40 F02D35/02 F02D35/00

Applicant  
TOYOTA JIDOSHA KABUSHIKI KAISHA

**1. This opinion contains indications relating to the following items:**

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

**2. FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

**3. For further details, see notes to Form PCT/ISA/220.**

Name and mailing address of the ISA:



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Tel. +49 89 2399 - 0 Tx: 523656 epmu d  
Fax: +49 89 2399 - 4465

Date of completion of  
this opinion

see form  
PCT/ISA/210

Authorized Officer

Vedoato, L

Telephone No. +49 89 2399-8053



**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/IB2005/003800

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**Box No. I Basis of the opinion**

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1. With regard to the **language**, this opinion has been established on the basis of:
  - ☒ the international application in the language in which it was filed
  - ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - ☐ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material:
    - ☐ on paper
    - ☐ in electronic form
  - c. time of filing/furnishing:
    - ☐ contained in the international application as filed.
    - ☐ filed together with the international application in electronic form.
    - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

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**Box No. II Priority**

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1. ☒ The validity of the priority claim has not been considered because the International Searching Authority does not have in its possession a copy of the earlier application whose priority has been claimed or, where required, a translation of that earlier application. This opinion has nevertheless been established on the assumption that the relevant date (Rules 43*bis*.1 and 64.1) is the claimed priority date.
2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.
3. Additional observations, if necessary:

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**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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**1. Statement**

Novelty (N)	Yes: Claims	1-12
	No: Claims	
Inventive step (IS)	Yes: Claims	1-12
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-12
	No: Claims	

**2. Citations and explanations**

**see separate sheet**

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**Box No. VII Certain defects in the international application**

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The following defects in the form or contents of the international application have been noted:

**see separate sheet**

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**Box No. VIII Certain observations on the international application**

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The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

**Re Item V.**

**Novelty**

The subject matter of claim 1 is not disclosed in its entirety by any of the available prior art documents, therefore it meets the requirements of Article 33(2) PCT. Same consideration apply to independent claim 7.

Dependent claims 2-6 and 8-12 meet the requirements of Article 33(2) PCT by virtue of their dependency.

**Inventive Step**

The document US 6,266,957 is considered to be the nearest prior art and discloses an engine by which a valve characteristic control apparatus is foreseen, which retards the closing timing of the exhaust valve during a warming up operation.

The valve characteristic control apparatus of claim 1 differs from the mentioned prior art in that the retard amount of the closing timing is set based on the number of fuel injections. This particular feature is not known nor rendered obvious by any of the available prior art documents. Thus the subject matter of claim 1 fulfills the requirements of Article 33(3) PCT. Same consideration apply to independent claim 7.

Dependent claims 2-6 and 8-12 meet the requirements of Article 33(4) PCT by virtue of their dependency.

**Industrial Applicability**

Industrial applicability is obviously given for all the claims.

**Re Item VII - Defects**

The present application does not fulfill the requirements of Article 6 and Rule 6.1 PCT due to a lack of conciseness: the subject matter of claims 7 onwards is in fact the same subject matter which can be found in claims 1 to 6.

**Re Item VIII - Clarity**

Claims 4 to 6 does not fulfill the requirements of Article 6 PCT because clarity lacks.

**WRITTEN OPINION OF THE  
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AUTHORITY (SEPARATE SHEET)**

International application No.

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According to independent claim 1 the retard is set depending on the number of injections, while according to claims 1-4, which depend from claim 1, the retard amount is set on the base of different parameters, namely coolant temperature, external load and elapsed time from the engine start up. It is therefore not clear according to what parameter the retard is set.

Same considerations apply to claims 10-12.

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**Re Item V.**

**Novelty**

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